



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/721,782

11/26/2003

Chekcheyev Sergey

1793.1100

5090

49455 7590 01/23/2007

STEIN, MCEWEN & BUI, LLP

1400 EYE STREET, NW

SUITE 300

WASHINGTON, DC 20005

EXAMINER

GIESY, ADAM

ART UNIT

PAPER NUMBER

2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/23/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/721,782		SERGEY ET AL.	
	Examiner		Art Unit	
	Adam R. Giesy		2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-28 is/are allowed.
- 6) ☒ Claim(s) 29,31,32 and 34 is/are rejected.
- 7) ☒ Claim(s) 30 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Upon further consideration, the Examiner hereby withdraws the Election of Species as required by the previous Office Action, mailed on 10/3/2006. All claims will now be prosecuted on the merits.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 29, 31, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tonami (US Pat. No. 6,765,856 B2) over Hutchins et al. (hereinafter Hutchins – US Pat. No. 5,568,465).

Regarding claim 29, Tonami discloses an equalizing method for a reproducing apparatus of a high density optical recording medium, the method comprising: detecting a difference component between a signal component of an input signal and a predetermined threshold level when the signal component of the input signal exceeds the predetermined threshold level (see column 14, lines 8-32) and adaptively suppressing the increased amplitudes of the high frequency spectrum components by the difference component (see Figure 9, element 16 – note that the equalization circuit performs adaptive equalization). Tonami does not disclose increasing amplitudes of

Art Unit: 2627

high frequency spectrum components of the input signal and outputting low frequency spectrum components of the input signal without increasing Inter-Symbol Interference.

Hutchins discloses a read circuit for an optical medium that includes an equalizer to increase amplitudes of high frequency spectrum components of the input signal and output low frequency spectrum components of the input signal without increasing Inter-Symbol Interference (see column 3, lines 2-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the equalization method as disclosed by Tonami with the high frequency boosting as disclosed by Hutchins, the motivation being to reduce the dynamic range between the high and low frequencies of the read channel.

Regarding claim 34, Tonami and Hutchins disclose all of the limitations of claim 29 as discussed in the claim 29 rejection above. Hutchins further discloses that the increased amplitudes of the high frequency spectrum components by the difference component suppresses the maximum amplitude of the high frequency component so that the output signal has minimal jitter (see column 3, lines 2-11 – not that the interference is directly related to the jitter and that by decreasing one, the other is also decreased).

Apparatus claims 32 and 34 are drawn to the apparatus corresponding to the method of using same as claimed in claims 29 and 31. Therefore apparatus claims 32 and 34 correspond to method claims 29 and 31, and are rejected for the same reasons of anticipation (obviousness) as used above.

Allowable Subject Matter

4. The following is a statement of reasons for the indication of allowable subject matter:
5. Claims 1-18 are allowable over the prior art of record.

Independent claims 1 and 15 are allowable since the claims recites an equalizer and an equalizer method for a high density optical disc reproducing apparatus, comprising: a non-linear transformer which transforms an input signal according to predetermined threshold levels; a cosine transform filter which inverts phases of high frequency spectrum components of an output signal of the non-linear transformer; a high boost filter which increases amplitudes of high frequency spectrum components of the input signal; and an adder which adds an output signal of the cosine transform filter with an output signal of the high boost filter.

Claims 2-14 and 16-28 are allowable as being dependent upon the aforementioned claims 1 and 15, respectively.

The closest prior art by Tonami (US Pat. No. 6,765,856 B2) discloses a method of monitoring signals within a specific threshold and then equalizing them. Tonami does not disclose a cosine filter for phase inversion of high frequency components, or a high boost filter for boosting the amplitude of the high frequency components.

6. Claims 30 and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 30 and 33, none of the prior art of record, alone or in combination, discloses or suggests all of the limitations of claims 29 and 32, respectively, as well as the further limitation that detecting the difference component between the signal component of the input signal and the predetermined threshold level when the signal component of the input signal exceeds the predetermined threshold level outputs the difference component between the amplitude of the input signal and the threshold level if the amplitude of the input signal exceeds the threshold level, and suppresses the input signal if the amplitude of the input signal is smaller than the threshold level.

The closest prior art by Tonami (US Pat. No. 6,765,856 B2) discloses a method of monitoring signals within a specific threshold and then equalizing them. Tonami does not disclose that when the signal component of the input signal exceeds the predetermined threshold level outputs the difference component between the amplitude of the input signal and the threshold level if the amplitude of the input signal exceeds the threshold level, and suppresses the input signal if the amplitude of the input signal is smaller than the threshold level.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Gagon (US Pat. No. 6,947,567 B1) discloses a phase inverter coupled with a summing amplifier for use as an audio boost circuit.

Art Unit: 2627

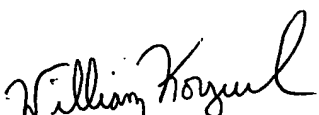
- b. Bauder et al. (US Pat. No. 6,853,246 B2) discloses a cosine filter coupled with an adaptive distortion filter.
- c. Huang et al. (US Pat. No. 6,885,241 B2) discloses a non-linear transformer coupled with a predistorter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam R. Giesy whose telephone number is (571) 272-7555. The examiner can normally be reached on 8:00am- 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ARG 1/19/2007



WILLIAM KORZUCH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600